

```
01 LBL "~" ;~=Sigma - SigmaREG Finder
02 XEQ "CT" ;Curtain Finder (Line 21)
03 RCL N
04 XEQ 14
05 -
06 CHS
07 RTN
08 LBL "S" ;Size Finder Routine
09 XEQ "CT" ;Curtain Finder (Line 21)
10 CHS
11 64
12 MOD
13 SF 25
14 LBL 00
15 RCL IND X
16 FC? 25
17 RTN
18 X<> L
19 +
20 GTO 00
21 LBL "CT" ;Curtain Finder
22 RCL c
23 LBL 14
24 STO M
25 >"\00\00\00" ;Append 3 nulls
26 CLX
27 ENTER
28 RCL M
29 X<> d
30 SF 00
31 SF 01
32 FS?C 10
33 ISG Y
34 "" ;F0=null string (NOP)
35 FS?C 11
36 SF 09
37 FS?C 12
38 SF 10
39 FS?C 13
40 SF 11
41 FS?C 14
42 SF 13
43 FS?C 15
44 SF 14
45 FS?C 16
46 SF 15
47 X<> d
48 ABS
49 FRC
50 +
51 E3
52 *
53 INT
54 DEC
55 RTN
56 LBL "DT" ;Display Test Routine
57 "\F8\0D\01\3C\01\21\40" ;Anunciators on
58 RCL M
59 X<> d
60 STO L
61 AON
62 "\02:\02:\02:" ;02 hex, colon (three times)
63 ASTO X
64 ARCL X
65 ARCL X
66 ARCL X
67 AVIEW
```

```

68 CLX
69 80
70 LBL 01
71 DSE X
72 GTO 01
73 "SCROLL"
74 AVIEW
75 "          \02," ;11 spaces, 02 hex, comma
76 ">"          "          ;Append 11 spaces
77 SF 25
78 AVIEW
79 PSE
80 X<> L
81 STO M
82 CLX
83 11
84 STO N
85 SF 99
86 LBL 02
87 SIN
88 DSE N
89 GTO 02
90 X<> M
91 STO d
92 CLX
93 CLA
94 CLD
95 RDN
96 RTN
97 LBL "FR"          ;Flag Reset Routine
98 "\2C\04\80\00"   ;2C048000 hex = Flag defaults if flag 55 not set
99 FS? 55
100 "\04\2C\04\80\01" ;042C048001 hex = Flag defaults if flag 55 set
101 ASTO d
102 CF 03
103 CLA
104 RTN
105 LBL "MANV" ;Mantissa View Routine
106 XEQ 14
107 STO N
108 RDN
109 VIEW M
110 RCL d
111 FIX 9
112 VIEW O
113 STO d
114 X<> N
115 RTN
116 LBL "MANT" ;Mantissa Routine
117 XEQ 14
118 SIGN
119 X<> O
120 RTN
121 LBL 14
122 CLA
123 STO N
124 >"#"
125 X<> N
126 X<> d
127 SCI 00
128 X<> d
129 X<> N
130 >"\00\00\00\00\00" ;Append 5 nulls
131 X<> N
132 CLX
133 X<> N
134 >"\00"          ;Append 1 null
135 RTN
136 LBL "EXP" ;Exponent Routine
137 XEQ "MANT" ;Mantissa Routine (Line 116)

```

```

138 X<> L
139 STO M
140 ST/ L
141 X<> L
142 LOG
143 CHS
144 X<> M
145 STO L
146 CLX
147 X<> M
148 RTN
149 LBL "HREG" ;Hold Registers Routine
150 STO L
151 CLX
152 RCL c
153 "ABCDE"
154 X<> M
155 STO N
156 ASHF
157 ASTO IND L
158 SREG IND L ;SigmaREG
159 RDN
160 LBL "~<>CT" ;~=Sigma - SigmaREG <> Curtain Pointer Exchange
161 CLA
162 RCL c
163 STO O
164 ">A"
165 CLX
166 RCL O
167 STO M
168 ">B"
169 CLX
170 STO M
171 ">CD"
172 X<> N
173 ">E"
174 X<> d
175 SCI IND O
176 X<> d
177 STO N
178 CLX
179 RCL c
180 SREG 00 ;SigmaREG
181 X<> c
182 STO M
183 ">F"
184 X<> O
185 ">GHI"
186 STO L
187 CLX
188 RCL c
189 STO M
190 CLX
191 RCL N
192 ">J"
193 STO M
194 ">K"
195 CLX
196 LASTX
197 STO M
198 ">L"
199 X<> N
200 STO c
201 RDN
202 RTN
203 LBL "RREG" ;Restore Registers Routine
204 CLA
205 ARCL 00
206 ASTO c
207 SREG 01 ;SigmaREG

```

```

208 RTN
209 LBL "XRE"      ;Enter ROM Routine
210 SF 10
211 STO M
212 CLX
213 RCL b
214 X<> M
215 FC?C 10
216 RTN
217 >"ABCDE"
218 X<> M
219 STO a
220 X<> N
221 X<> M
222 ARCL 00
223 X<> M
224 STO N
225 CLX
226 X<> a
227 X<> M
228 >"AB"
229 STO M
230 X<> N
231 STO b
232 LBL "VFLAGS" ;View Flags that are set
233 .055
234 "FLAGS SET:"
235 AVIEW
236 STO L
237 CLX
238 LBL 03
239 CLA
240 FS? IND L
241 XEQ 14
242 ISG L
243 GTO 03
244 RDN
245 RTN
246 LBL "SIZECK" ;Verify Available Size
247 SF 25
248 ABS
249 CLX
250 E
251 ST- L
252 ARCL IND L
253 ST+ L
254 RDN
255 FS? 25
256 RTN
257 "RESIZE>= "
258 LBL 14
259 X<> d
260 FIX 0
261 ARCL L
262 X<> d
263 AVIEW
264 PSE
265 RTN
266 LBL "CFX"      ;Clear Flag Indirect X
267 FS? IND X
268 GTO "TFX"      ;Toggle Flag Indirect X (Line 273)
269 RTN
270 LBL "SFX"      ;Set Flag Indirect X
271 FS? IND X
272 RTN
273 LBL "TFX"      ;Toggle Flag Indirect X
274 ENTER
275 CLA
276 8
277 ST/ Z

```

```

278 MOD
279 X<>Y
280 INT
281 E
282 -
283 10^X
284 RCL d
285 STO N
286 FIX 0
287 CF 29
288 ARCL Y
289 X<> N
290 X<> d
291 FC?C IND Z
292 SF IND Z
293 X<> d
294 STO N
295 5
296 LASTX
297 -
298 10^X
299 ARCL X
300 X<> O
301 STO d
302 RTN
303 LBL "RRTN" ;Restore Return Stack Routine
304 CF IND Y
305 CF 10
306 XEQ "NRCL" ;Recall NNN from Rx, Rx+1 (Line 348)
307 R^
308 2
309 +
310 XEQ "NRCL" ;Recall NNN from Rx, Rx+1 (Line 348)
311 X<>Y
312 STO a
313 X<>Y
314 STO b
315 LBL "XRTN" ;Extend Subroutine Return Stack
316 SF IND Y
317 SF 10
318 RCL a
319 X<> Y
320 XEQ "NSTO" ;Store N in Rx, Rx+1 (Line 327)
321 RCL b
322 FC?C 10
323 RTN
324 R^
325 E
326 +
327 LBL "NSTO" ;Store N in Rx, Rx+1
328 CLA
329 X<>Y
330 STO M
331 X<>Y
332 >"*" ;Append 1 asterisk
333 0
334 X<> N
335 X<> M
336 ASTO IND Y
337 STO M
338 X<>Y
339 E
340 +
341 E11
342 STO N
343 >"123456"
344 X<> N
345 STO IND Y
346 R^
347 RTN

```

```

348 LBL "NRCL" ;Recall NNN from Rx, Rx+1
349 CLA
350 E
351 +
352 ARCL IND X
353 >"*" ;Append 1 asterisk
354 E
355 -
356 RCL M
357 CLA
358 ARCL IND Y
359 X<> M
360 STO N
361 >"123456"
362 RCL N
363 R^
364 X<>Y
365 RTN
366 LBL "BCE" ;Byte Count with END
367 XEQ "BC" ;Byte Count between Two Lines (Line 371)
368 3
369 +
370 RTN
371 LBL "BC" ;Byte Count between Two Lines
372 XEQ "P^D" ;Byte Count to Line from 000 Absolute (Line 378)
373 X<>Y
374 XEQ "P^D" ;Byte Count to Line from 000 Absolute (Line 378)
375 -
376 CHS
377 RTN
378 LBL "P^D" ;Byte Count to Line from 000 Absolute
379 "A"
380 X<> M
381 STO N
382 ASHF
383 >"\00\00\00\01" ;Append 3 nulls, 01 hex
384 X<> M
385 X<> d
386 FS?C 15
387 SF 13
388 FS?C 16
389 SF 14
390 FS?C 17
391 SF 15
392 FS?C 18
393 SF 17
394 FS?C 19
395 SF 18
396 FS?C 20
397 SF 19
398 X<> d
399 INT
400 LASTX
401 FRC
402 E3
403 *
404 DEC
405 7
406 *
407 +
408 E
409 -
410 RTN
411 LBL "PD+" ;Increment Pointer by Decimal Number
412 CHS
413 X<>Y
414 XEQ "P^D" ;Byte Count to Line from 000 Absolute (Line 378)
415 +
416 LBL "D^P" ;Decimal to Pointer (opposite of P^D)
417 E

```

```

418 +
419 7
420 XEQ "/R" ;Quotient and Remainder (Line 445)
421 16
422 *
423 X<>Y
424 LASTX
425 X^2
426 XEQ "/R" ;Quotient and Remainder (Line 445)
427 RDN
428 +
429 CLA
430 XEQ "D^C" ;Decimal -> Append Byte to Alpha (V7N7P19 H^N Line 192)
431 X<>Y
432 XEQ "D^C" ;Decimal -> Append Byte to Alpha (V7N7P19 H^N Line 192)
433 RCL M
434 RTN
435 LBL "REG" ;Register and Byte Number for Program Line
436 XEQ "P^D" ;Byte Count to Line from 000 Absolute (Line 378)
437 7
438 XEQ "/R" ;Quotient and Remainder (Line 445)
439 LASTX
440 -
441 - E1
442 /
443 +
444 RTN
445 LBL "/R" ;Quotient and Remainder
446 X<>Y
447 STO O
448 X<>Y
449 MOD
450 ST- O
451 LASTX
452 ST/ O
453 CLX
454 STO P
455 X<> O
456 X<>Y
457 RTN
458 LBL "KU" ;Keys Used
459 8
460 STO 03
461 SF 25
462 XROM 29,10 ;PRBUF
463 FC? 25
464 CF 21
465 "KEYS USED:"
466 AVIEW
467 "\10\F0\92\70\00\08\00\00\01" ;10F092700008000001 hex
468 RCL R
469 X<> M
470 STO 02
471 RCL e
472 X<> N
473 STO O
474 FIX 1
475 CF 29
476 ARCL Y
477 FIX 0
478 X<> O
479 STO M
480 ">\20\F0" ;Append space, F0 hex
481 RCL N
482 X<> d
483 RCL M
484 CLA
485 LBL 04
486 RCL 02
487 RCL 03

```

488 -  
489 STO 01  
490 RDN  
491 LBL 05  
492 FC? IND 01  
493 FC? 50  
494 GTO 12  
495 X<> d  
496 FC? IND 01  
497 FC? 50  
498 GTO 12  
499 X<> d  
500 LBL 06  
501 ISG 01  
502 GTO 05  
503 DSE 03  
504 GTO 04  
505 X<>Y  
506 STO d  
507 FS? 21  
508 CLA  
509 >" END"  
510 AVIEW  
511 GTO 14  
512 LBL 12  
513 X<> d  
514 35  
515 RCL 01  
516 INT  
517 +  
518 OCT  
519 E  
520 ST+ Y  
521 %  
522 +  
523 E1  
524 MOD  
525 LASTX  
526 \*  
527 INT  
528 STO 00  
529 43  
530 -  
531 ABS  
532 E  
533 X<Y?  
534 ST+ 00  
535 FS? 42  
536 FC? IND 01  
537 CHS  
538 R^  
539 R^  
540 " "  
541 FC? 42  
542 " -"  
543 FS? 50  
544 X<> d  
545 X<>Y  
546 FC? 50  
547 GTO 13  
548 X<> d  
549 ARCL 00  
550 ISG Z  
551 GTO 12  
552 >" -"  
553 ARCL 00  
554 LBL 12  
555 AVIEW  
556 FC? 21  
557 TONE 70



```

558 X<> d
559 X<>Y
560 FS? 42
561 X<> d
562 GTO 06
563 LBL 13
564 STO d
565 CLD
566 LBL 14
567 FC?C 25
568 SF 21
569 CLST
570 RTN
571 LBL "DSTO" ;Display Mode Store using X
572 STO L
573 CLX
574 RCL d
575 STO M
576 >"\00\00" ;Append 2 nulls
577 X<> M
578 GTO 14
579 LBL "SKA" ;Save Key Assignment Bit Map in Rx, Rx+1
580 STO L
581 CLX
582 X<> R
583 XEQ 14
584 ISG L
585 "" ;F0=null string (NOP)
586 .
587 X<> e
588 LBL 14
589 "\01" ;01 hex
590 X<> M
591 STO N
592 ASTO IND L
593 RDN
594 RTN
595 LBL "DRCL" ;Display Mode Recall using X
596 STO L
597 XEQ 14
598 RCL d
599 STO M
600 >"AB"
601 RDN
602 STO M
603 >"\00\00\00\00\00" ;Append 5 nulls
604 X<> N
605 STO d
606 RDN
607 RTN
608 LBL "RKA" ;Recall Key Assignment Bit Map from Rx, Rx+1
609 STO L
610 XEQ 14
611 STO R
612 ISG L
613 "" ;F0=null string (NOP)
614 XEQ 14
615 STO e
616 RDN
617 RTN
618 LBL 14
619 CLA
620 ARCL IND L
621 >"\00\00" ;Append 2 nulls
622 CLX
623 RCL M
624 END

```

057EC000F2007E1EF243549076E0000E415485C000F200531E  
F243545416144BA8190190F3AD1985CE7440B100C000F30043  
54907D0F9175F47F00000077839075CE7EA800A801AA0A9672  
F0AA0BA809AA0CA80AAA0DA80BAA0EA80DAA0FA80EAA10A80F  
CE7E6169401B1342685F85C000F3004454F7F80D013C012140  
9075CE7E91748CF6023A023A023A9A739B739B739B737E7718  
10029773B200F65343524F4C4C7EFD202020202020202020  
20022CFC7F2020202020202020202020A8197E89CE74917577  
11119176A86303599776B300CE75917E77877F7585C000F300  
4652F42C048000AC37F5042C0480019A7EA9038785C000F500  
4D414E56E0000E9176759875907E9C099877917ECE7685C000  
F5004D414E54E0000E7ACE77850F879176F27F23CE76CE7E9D  
00CE7ECE76F67F0000000000CE7677CE76F27F0085C000F400  
4558501EF44D414E54CE7491759574CE745654CE75917477CE  
7585C000F50048524547917477907DF54142434445CE759176  
889AF499F475C000F6007E3C3E435487907D9177F27F417790  
779175F27F42779175F37F4344CE76F27F45CE7E9DF7CE7E91  
7677907D9900CE7D9175F27F46CE77F47F474849917477907D  
9175779076F27F4A9175F27F4B77769175F27F4CCE76917D75  
85C000F50052524547879B009A7D990185C000F400585245A8  
0A917577907CCE75AB0A85F67F4142434445CE75917BCE76CE  
759B00CE75917677CE7BCE75F37F41429175CE76917CC000F7  
0056464C4147531A101515FA464C414753205345543A7E9174  
770487ACF4E0000E9674B4007585C000F70053495A45434BA8  
1961771B93749BF4927475AC1985F9524553495A453E3D200F  
CE7E9C009B74CE7E7E8985C000F400434658ACF31DF3544658  
85C000F400534658ACF385C000F40054465883871895714B71  
681B4157907E91769C00A91D9B72CE76CE7EABF1A8F1CE7E91  
76157641579B73CE77917E85C000F5005252544EA9F2A90A1E  
F44E52434C7412401EF44E52434C71917B71917CC000F50058  
52544EA8F2A80A907BCE721EF44E53544F907CAB0A85741B40  
C000F5004E53544F8771917571F27F2A10CE76CE759AF29175  
711B401B11119176F77F313233343536CE7691F27485C000F5  
004E52434C871B409BF3F27F2A1B419075879BF2CE759176F7  
7F3132333435369076747185C000F4004243451EF242431340  
85C000F30042431EF3505E44711EF3505E44415485C000F400  
505E44F141CE75917688F57F00000001CE75CE7EAA0FA80DAA  
10A80EAA11A80FAA12A811AA13A812AA14A813CE7E6876691B  
13425F1742401B4185C000F40050442B54711EF3505E4440C0  
00F400445E501B40171EF22F521116427176511EF22F527540  
871EF3445E43711EF3445E43907585C000F4005245471EF350  
5E44171EF22F5276411C1B11434085C000F3002F5271917771  
4B9377769577779178CE777185C000F3004B551833A819A74A  
AD19A915FA4B45595320555345443A7EF910F0927000080000  
01907ACE7532907FCE7691779C01A91D9B729C00CE779175F3  
7F20F09076CE7E90758705222341317506AD81AD32BD00CE7E  
AD81AD32BD00CE7E079601B6009703B50071917EAC1587F67F  
2020454E447EBF000DCE7E13152168406F1B92724C401B114B  
76426830141341611B449200AC2AAD81547474F120AD2AF520  
2020202DAC32CE7E71AD32BE00CE7E9B009671BD00F37F202D  
9B000D7EAD159F46CE7E71AC2ACE7EB7000E917E7F0FAB19A8  
157385C000F5004453544F917477907E9175F37F0000CE75BF  
00C000F400534B41917477CE7AE0000E9674F01ACE7F0FF101  
CE7591769AF47585C000F5004452434C9174E0000E907E9175  
F37F4142759175F67F0000000000CE76917E7585C000F40052  
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1406 BYTES

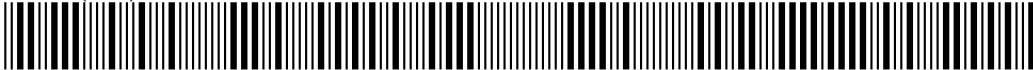
# HP-41C PPC ROM Routines 1 by PPC ROM Authors PPC V7 N7 P18 Sept 1980

Program Registers Needed: 201

Row 1 (1 - 4)



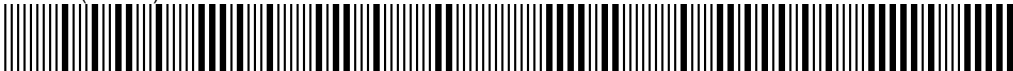
Row 2 (4 - 9)



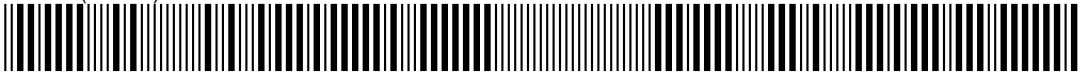
Row 3 (10 - 18)



Row 4 (18 - 23)



Row 5 (24 - 29)



Row 6 (30 - 36)



Row 7 (37 - 43)



Row 8 (43 - 51)



Row 9 (51 - 57)



Row 10 (57 - 61)



Row 11 (62 - 65)



Row 12 (66 - 73)



Row 13 (73 - 75)



Row 14 (75 - 76)



Row 15 (76 - 80)



Row 16 (81 - 88)



# HP-41C PPC ROM Routines 1 by PPC ROM Authors PPC V7 N7 P18 Sept 1980

Row 17 (89 - 97)



Row 18 (97 - 100)



Row 19 (100 - 105)



Row 20 (105 - 109)



Row 21 (110 - 116)



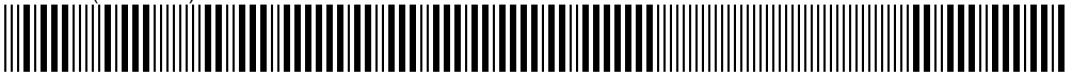
Row 22 (116 - 120)



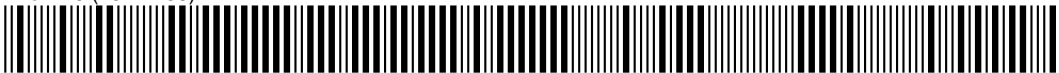
Row 23 (121 - 127)



Row 24 (128 - 131)



Row 25 (132 - 136)



Row 26 (136 - 140)



Row 27 (141 - 149)



Row 28 (149 - 153)



Row 29 (153 - 158)



Row 30 (158 - 162)



Row 31 (162 - 168)



Row 32 (168 - 173)



Row 33 (174 - 180)

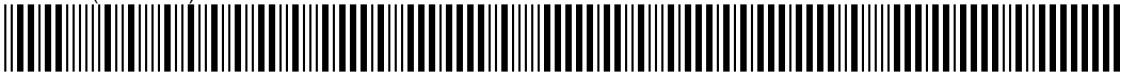


# HP-41C PPC ROM Routines 1 by PPC ROM Authors PPC V7 N7 P18 Sept 1980

Row 34 (181 - 185)



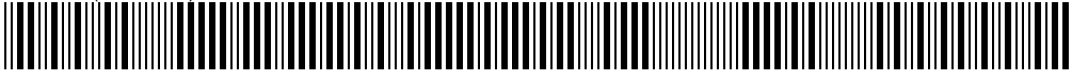
Row 35 (185 - 192)



Row 36 (192 - 198)



Row 37 (199 - 203)



Row 38 (203 - 209)



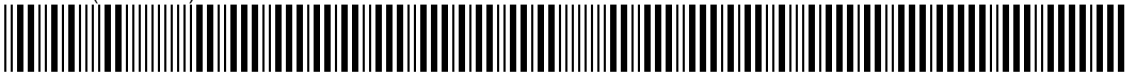
Row 39 (209 - 215)



Row 40 (215 - 219)



Row 41 (220 - 226)



Row 42 (227 - 232)



Row 43 (232 - 233)



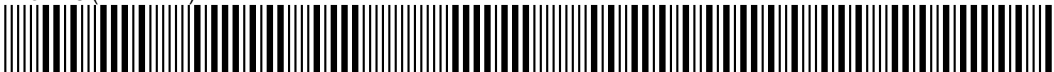
Row 44 (234 - 236)



Row 45 (236 - 243)



Row 46 (244 - 247)



Row 47 (247 - 255)



Row 48 (256 - 259)



Row 49 (259 - 266)



Row 50 (266 - 270)

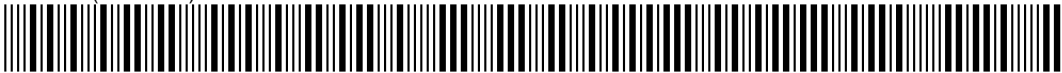


# HP-41C PPC ROM Routines 1 by PPC ROM Authors PPC V7 N7 P18 Sept 1980

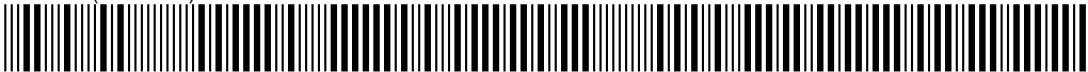
Row 51 (270 - 273)



Row 52 (273 - 282)



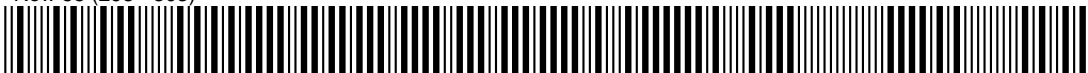
Row 53 (283 - 289)



Row 54 (290 - 297)



Row 55 (298 - 303)



Row 56 (303 - 306)



Row 57 (307 - 313)



Row 58 (314 - 317)



Row 59 (317 - 321)



Row 60 (322 - 327)



Row 61 (327 - 335)



Row 62 (335 - 342)



Row 63 (343 - 346)



Row 64 (347 - 352)



Row 65 (352 - 359)



Row 66 (360 - 363)



Row 67 (364 - 367)



# HP-41C PPC ROM Routines 1 by PPC ROM Authors PPC V7 N7 P18 Sept 1980

Row 68 (368 - 372)



Row 69 (372 - 378)



Row 70 (378 - 383)



Row 71 (383 - 388)



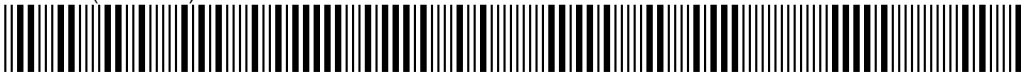
Row 72 (388 - 394)



Row 73 (395 - 402)



Row 74 (403 - 411)



Row 75 (411 - 416)



Row 76 (416 - 421)



Row 77 (422 - 430)



Row 78 (430 - 435)



Row 79 (435 - 438)



Row 80 (438 - 445)



Row 81 (445 - 452)



Row 82 (452 - 458)



Row 83 (458 - 465)

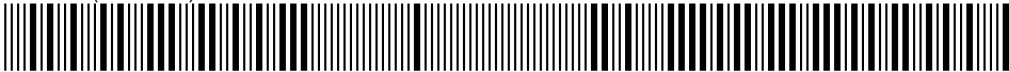


Row 84 (465 - 467)



# HP-41C PPC ROM Routines 1 by PPC ROM Authors PPC V7 N7 P18 Sept 1980

Row 85 (467 - 471)



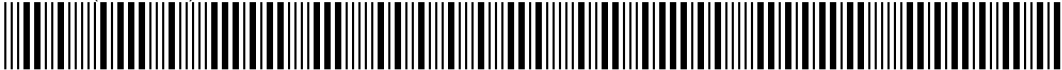
Row 86 (471 - 477)



Row 87 (478 - 483)



Row 88 (483 - 493)



Row 89 (494 - 500)



Row 90 (501 - 507)



Row 91 (508 - 513)



Row 92 (513 - 523)



Row 93 (523 - 534)



Row 94 (534 - 542)



Row 95 (542 - 547)



Row 96 (547 - 552)



Row 97 (553 - 560)



Row 98 (561 - 568)



Row 99 (569 - 573)



Row 100 (574 - 579)



Row 101 (579 - 583)





# HP-41C PPC ROM Routines 1 by PPC ROM Authors PPC V7 N7 P18 Sept 1980

Row 102 (583 - 591)



Row 103 (591 - 595)



Row 104 (596 - 600)



Row 105 (601 - 605)



Row 106 (605 - 610)



Row 107 (610 - 616)



Row 108 (617 - 624)



Row 109 ( 624 )

